

SUPPORT FOR THE AMENDMENTS

Claim 1 is amended to include the description of Claim 16. Claim 16 is canceled. Further support for the amendment of Claim 1 is found on page 18, lines 28-33, in the specification.

Claim 5 is amended to use proper antecedent basis to Claim 1.

Claim 10 is amended to correct an obvious error. The redundant use of the word “is” is eliminated.

Claim 17 is amended to depend from Claim 1.

Claims 2-4, 6-8, 10-11, 19-21, and 25-26 are canceled. Applicants preserve the right to present the subject matter of these claims in a divisional application, filed during the pendency of the above-identified application.

Claim 23 is amended to more clearly describe the embodiment of the invention therein.

Claim 24 is amended to be consistent in description with Claim 1.

No new matter is believed added to this application by entry of this amendment.

Upon entry of this amendment, Claims 1, 5, 9, 12-15, 17-18, 22-24 and 27-32 are active. Claim 5 and 10 is withdrawn. However, in view of the amendments herein, Applicants respectfully submit that claim 5 depends directly from Claim 1, and should be rejoined.

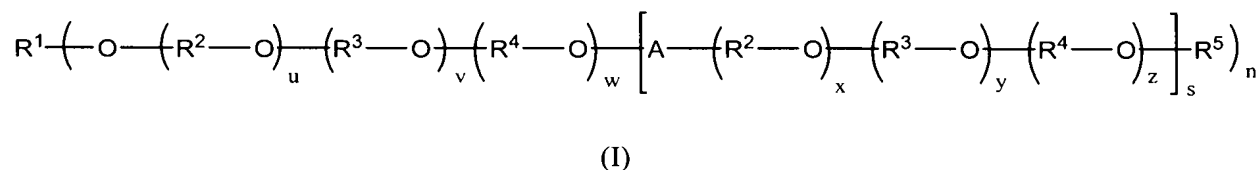
REMARKS/ARGUMENTS

The claimed invention is directed to a cosmetic preparation of a cationic polymer especially useful for hair cosmetic formulations. Hair cosmetic formulations which are clear in appearance, provide a strong hold for elastic hairstyles in humid atmospheric conditions, and provide good feel to the hair, especially in terms of ease of combing and detangling are sought.

The claimed invention addresses this problem by providing the cosmetic preparation as presently described, including amendments made herein, in Claim 1 and claims dependent thereon. No such cosmetic preparation is disclosed or suggested in the cited references.

Applicants wish to thank Examiner Silverman for the useful and courteous discussion of the above-identified application with Applicants' representatives on November 5, 2008. At that time Applicants' representatives suggested and discussed amendment of Claim 1 to include the description of the polyether-comprising compound (b) as recited in Claim 16. Applicants' representatives reviewed and compared the suggested description to the cited references and showed that the references neither disclose or suggest the claimed invention as amended. The following reiterates and expands upon that discussion. In addition, the following addresses the Examiner's remarks made in the Advisory Action of May 12, 2009.

Applicants respectfully note that Claim 1 is herein amended to include the description that the polyether-comprising compound (b) is represented by the following formula (I):

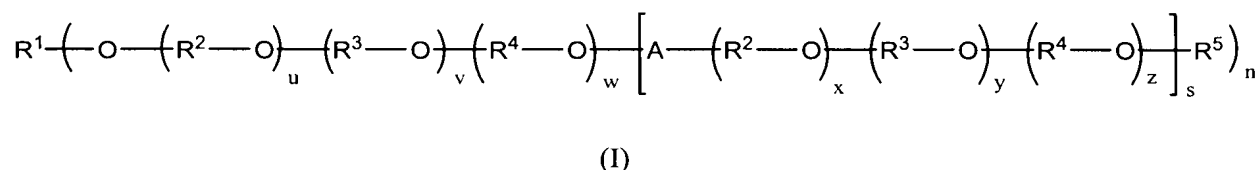


wherein the variables are as described in Claim 1. Applicants respectfully note that  $R^1 - R^5$  according to formula (I) **do not contain ethylenically unsaturated groups**. In

addition, Claim 1 is herein amended to specifically describe the component (a1) and/or a direct preproduct (a2) thereof is at least one selected from the group consisting of 3-methyl-1-vinylimidazolium chloride, 3-methyl-1-vinylimidazolium methylsulfate and N,N-dimethyl-N,N-diallylammonium chloride.

The rejection of Claims 1-4, 6-9, 11-17, 22-29 and 32 under 35 U.S.C. 102(b) over JP 2001-181354 is respectfully traversed.

JP 2001-181354 does not disclose or suggest a cosmetic preparation according to the claimed invention where a cationic polymer is formed in the presence of the polyether-comprising compound (b) as described in Claim 1 of the present invention and represented by the following formula (I):



JP 2001-181354 describes copolymers containing a **polyethylene oxide ester of acrylic acid**. Applicants note that this monomer, as a derivative of acrylic acid contains an **ethylenically unsaturated group**, as required for free radical polymerization.

In contrast, as described above, none of  $R^1 - R^5$  according to formula (I) **contain ethylenically unsaturated groups**. The cited reference neither discloses nor suggests a cosmetic preparation according to the claimed invention where the cosmetic preparation comprising a cationic polymer is produced by polymerizing from 3 to 30% by weight of at least one quaternary nitrogen-comprising free-radically polymerizable monomer (a1) and/or a direct preproduct (a2) thereof in the presence of from 70 to 97% by weight of at least one polyether-comprising compound (b), as represented by formula (I).

In view of the foregoing, Applicants respectfully submit that the cited reference can neither anticipate nor render the claimed invention obvious. Accordingly, withdrawal of the rejection of Claims 1-4, 6-9, 11-17, 22-29 and 32 under 35 U.S.C. 102(b) over JP 2001-181354 is respectfully requested.

The rejection of Claims 1-4, 6-9, 11-18, 22, 24-29, 31 and 32 under 35 U.S.C. 103(a) over Hosoda et al. (U.S. 4,380,600) is respectfully traversed.

Hosoda describes an aqueous dispersion of a polymer obtained by polymerizing a water soluble ethylenically unsaturated monomer (a) in an aqueous solution of a water soluble polymer (b).

Hosoda describes three types of monomers as capable of forming the water soluble polymer (a) (Col. 4, line 1 to Col. 5, line 25) as represented by formulae (I), (II) and (III). Of these, formula (III) represents cationic monomers derived from alkylene amine esters of acrylic or methacrylic acid. Further monomers capable of forming water soluble polymers are vinylpyridine and vinylpyrrolidone (Col. 5, lines 20-25). Nowhere does Hosoda disclose or suggest 3-methyl-1-vinylimidazolium chloride, 3-methyl-1-vinylimidazolium methylsulfate and N,N-dimethyl-N,N-diallylammonium chloride as presently described in the claimed invention.

The water soluble polymer (b) is present in a range of 3 to 150 parts per 100 parts water by weight and the monomer (a) is present in a range of from 10 to 150 parts per 100 parts of water by weight (Claim 1). Therefore the minimum per cent water in the composition during polymerization of (a) is 25 % by weight.

In contrast, in the claimed invention, **the water content in the reaction mixture during the polymerization is less than 20 % by weight.** Applicants have described the water content of the polymerization of the at least one quaternary nitrogen-comprising free-

radically polymerizable monomer (a1) and/or a direct preproduct (a2) thereof in the presence of polyether-comprising compound (b) as follows:

“Here, the content of water in the reaction mixture during the polymerization is less than 20% by weight, preferably less than 15%, particularly preferably less than 10% by weight, especially preferably less than 5% by weight. Preference is given here to working under essentially anhydrous conditions and carrying out a bulk polymerization. In this connection, “essentially anhydrous” means that, apart from the water present in the starting materials, no additional water is introduced into the reaction mixture.” (Page 29, lines 8-16)

Applicants have suggested the importance of the reduced water content according to the claimed invention as follows:

“In the preparation of the polymers used according to the invention, grafting onto the polyether-containing compounds (b) may occur during the polymerization, which may lead to the advantageous properties of the polymers. Depending on the degree of grafting, the polymers used according to the invention are to be understood as meaning either pure graft polymers or mixtures of the abovementioned graft polymers with nongrafted polyether-containing compounds and homo- or copolymers of the monomers (a1) and optionally (a2), (c) and (d). In this connection, the polymers according to the invention are markedly superior with regard to their properties to mixtures in which the polymerization is realized in the presence of relatively large amounts of water (see comparative experiment 1) or in which the polyether component is only added after the polymerization of the monomers (see comparative experiment 2). However, mechanisms other than grafting are also conceivable which can bring about these changed advantageous properties.” (page 7, lines 26-42)

Moreover, Applicants have shown significant improvement in cosmetic hair treatment performance in terms of reduction in combing force in the following Table (page 46) which is reproduced from the specification for the Examiner’s convenience.

	Example 1	Comparison 1	Comparison 2a	Comparison 2b	Comparison 3
Solids content (% by wt.)	60.2	49.8	10.8	60.8	37.2
Combing force decrease wet (%) (Europ. hair)	44	23	15	18	28
Combing force decrease dry (%) (Asiat. hair)	86	77	ND	ND	79
Surfactant solution 0.5% active ingredient	clear	clear	slightly cloudy	clear	clear
K value 1% in ethanol	15.1				

ND: Not determined since combing force decrease wet insufficient (<20%)

Applicants note the Examiner's comments regarding the solids content in the Table (Advisory Action dated May 12, 2009, Continuation sheet, lines 9-12) and respectfully submit that the solids content displayed in the Table refers only to the solids content of the polymerization mixture and should not be confused with the solids content of the respective shampoo compositions. The shampoo compositions were all prepared to be of solids content 0.5% by weight (page 43, lines 14-22) and are directly comparable.

The polymers were used in a surfactant solution formulation with the following composition:

40.0% of Texapon NSO (sodium laureth sulfate solution 28%; Cognis)

10.0% of Tego-Betaine L7 (cocamidopropylbetaine solution 30%; Goldschmidt)

0.5% of polymer (solids content)

add 100% of water

In Comparative Example 1, the cationic polymer of the inventive example 1 was prepared in a polymerization mixture having a water content of 50 % by weight.

Comparative Example 2b is simply a physical mixture of a cationic polymer of the same monomer composition which is physically mixed with the polyether compound after polymerization is complete.

The composition according to the claimed invention shows a significant reduction in combing force for both wet and dry hair in comparison to the comparative examples. Such improvement is neither disclosed nor suggested by Hosoda.

Applicants particularly note the Examiner's comments (Advisory Action dated May 12, 2009, Continuation sheet, lines 4-8):

Here, Applicants allege that the showing in a table on page 46 of the specification proves that the water content of less than 20% imparts a distinction on the claimed polymer. This is not persuasive for several reasons. First, the showing is not commensurate with the claims. The showing is for one specific polymer, whereas the claims include a broad genus of [polymers]. There is no evidence of record indicating that the showing is fully representative of the genus; . . .

Applicants note that the claimed invention has been amended to specifically describe 3-methyl-1-vinylimidazolium chloride, 3-methyl-1-vinylimidazolium methylsulfate and N,N-dimethyl-N,N-diallylammonium chloride as the cationic monomer. Further, Applicants note that Example 1 as described on page 39 of the specification was prepared with a combination vinylimidazolium methylsulfate and N,N-dimethyl-N,N-diallylammonium chloride. Based on the specificity presently claimed, Applicants submit that the example does represent the claimed invention and shows significant improvement obtained according to the present invention.

Moreover, Applicants continue to believe that the cited reference actually teaches away from a concentration of water of less than 20 % by weight. Regarding the concentration of polymer (b), Hosoda states:

“ . . . , if the amount exceeds 150 parts by weight, it is difficult to dissolve the polymer (b) in water. Furthermore, since the polymer (b) itself has a high viscosity in water, the viscosity of the final aqueous dispersion of the polymer is excessively high, and the desired flowability and stability will not be obtained.” (Col. 6, lines 12-19)

Regarding the water concentration of the monomer (a), Hosoda describes:

“ . . . , if it exceeds 150 parts by weight, the viscosity of the final dispersion becomes too high, and the desired product with superior stability and flowability cannot be obtained.” (Col. 6, lines 28-33)

Applicants respectfully call the Examiner's attention to the following excerpt from the Office's own discussion of **“Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in View of the Supreme Court Decision in *KSR International Co. v. Teleflex Inc.*”**

“The rationale to support a conclusion that the claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded nothing more than predictable results to one of ordinary skill in the art at the time of the invention.”<sup>43</sup> “[I]t can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.”<sup>44</sup> **If any of these findings cannot be made, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art,**” (Federal Register, Vol. 72, No. 195, page 57529) **(Bold added)**

As described above, Applicants respectfully submit that the cited reference does not disclose or suggest a cationic monomer according to the presently claimed invention nor is polymerization in a mixture of less than 20 % by weight water disclosed or suggested.



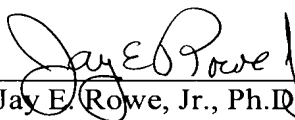
Moreover, Applicants submit that Hosoda actually teaches away from such a concentration. Additionally, the reference does not disclose or provide motivation that would have guided one of ordinary skill in the art, at the time of the invention to obtain the significant improvement in cosmetic hair treatment performance in terms of reduction in combing force as obtained in the claimed invention. Accordingly, Applicants respectfully submit that the cited reference can neither anticipate nor render the claimed invention obvious, and withdrawal of the rejection of Claims 1-4, 6-9, 11-18, 22, 24-29, 31 and 32 under 35 U.S.C. 103(a) over Hosoda is respectfully requested.

Applicants wish to thank Examiner Silverman for the indication that the elected species of Claim 1 is allowable. Applicants respectfully request that in view of the amendments herein, the scope of patent protection is narrowed to compounds of formula (I) and that the species of polymerizable monomers (a1) or preproduct (a2) as presently described in the claims is allowable.

Applicants respectfully submit that the above identified application is now in condition for allowance and early notice of such action is earnestly solicited.

Respectfully submitted,

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